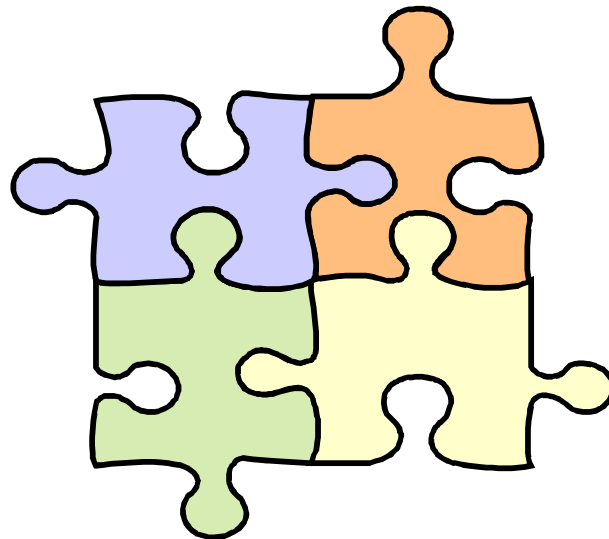


**Field Review of  
Proposed Single Subject Subject-Matter  
Program Standards  
In Math**



**Survey  
August 2002**

## Introduction

Your response to this survey will inform the California Commission on Teacher Credentialing's field review of proposed new standards of program quality and effectiveness for Single Subject Subject-Matter Programs. These programs for prospective teachers offer one pathway to demonstrate competency in a subject area. In addition to subject matter competency, prospective single subject teachers must also complete an approved program of pedagogical preparation that focuses on the knowledge, skills and abilities associated with a departmentalized teaching assignment.

Individuals holding a Single Subject Teaching Credential may teach in a specific subject area in departmentalized classes in grades K-12. Departmentalized classes are those in which a teacher teaches one subject to a class of students and are typically offered in high schools and middle or junior high schools.

It is the responsibility of the Commission to ensure that each prospective teacher experiences a high quality preparation program. The Commission does this by adopting standards of program quality and effectiveness that assure consistency across all approved programs in all subject areas. This set of draft standards for single subject programs is divided into two sections, Standards Common to All and Standards for Programs in Math.

The Draft Standards Common to All address program qualities that are consistent across all subject areas. The proposed standards are:

- Draft Standard 1: Program Philosophy
- Draft Standard 2: Technology
- Draft Standard 3: Diversity and Equity
- Draft Standard 4: Coordination
- Draft Standard 5: Advisement and Support
- Draft Standard 6: Assessment of Subject Matter Competence
- Draft Standard 7: Program Review and Evaluation
- Draft Standard 8: Literacy
- Draft Standard 9: Early Field Experiences
- Draft Standard 10: Varied Teaching Strategies

The Draft Standards Common for Programs in Math are:

- Draft Standard 11: Required Subjects of Study
- Draft Standard 12: Problem Solving

Draft Standard 13: Mathematics as Communication

Draft Standard 14: Reasoning

Draft Standard 15: Mathematical Connections

Draft Standard 16: Delivery of Instruction

Each standard includes the standard statement and required elements. The required elements provide further description and explanation of the concepts addressed in the standard statement. Program sponsors will be expected to address the standard as a whole and each required element.

### General Directions

The survey questions are designed to find out how important you and other educators think the proposed standards and their required elements are in the preparation of effective single subject teachers. Survey results will be used to revise the draft standards and develop a final set of standards for recommendation to the Commission for adoption. Once adopted, each prospective program sponsor in a single subject area will be required to prepare a written response to the new standards.

You will be asked to rate the importance of each program standard statement and each required element in relation to the effective preparation of prospective teachers. You will also be asked whether any program elements are missing and will be provided space to suggest additional elements or topics to be addressed in the standard. Finally you will be asked whether this draft set of subject area program standards considered as a whole address all the elements necessary for a program to prepare effective teachers of Math.

Please answer the survey questions based on your own experiences.

<b>1. Are you currently working in a K-12 or an IHE organization?</b> Yes <input type="radio"/> GO to Question 2 No <input type="radio"/> STOP! You do not have to answer any more questions. Please discard this survey.	<b>2. Are you currently, or have you recently (last 3-5 years) been working with the area of math?</b> Yes <input type="radio"/> GO to Question 3 No <input type="radio"/> STOP! You do not have to answer any more questions. Please discard this survey.	<b>3. Are you familiar with the K-12 student academic content standards in math?</b> Yes <input type="radio"/> GO to Question 4 No <input type="radio"/> STOP! You do not have to answer any more questions. Please discard this survey.
<b>4. Name:</b>  	<b>5. Position:</b>  	<b>6: May we contact you for further information?</b> Telephone: (____)-____-_____ Fax: (____)-____-_____ Email: _____

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## **Draft Standards Common to All**

Standard 1:	Program Philosophy and Purpose
Standard 2:	Technology
Standard 3:	Diversity and Equity
Standard 4:	Coordination
Standard 5:	Advisement and Support
Standard 6:	Assessment of Subject Matter Competence
Standard 7:	Program Review and Evaluation
Standard 8:	Literacy
Standard 9:	Early Field Experiences
Standard 10:	Varied Teaching Strategies

## Standards Common to All

	<b>1.0 How important are these program characteristics in preparing effective teachers of math?</b>			
<b>Draft Standard 1: Program Philosophy and Purpose</b>	<b>Essential</b>	<b>Important</b>	<b>Somewhat Important</b>	<b>Not Important</b>
The subject matter preparation program is based on an explicit statement of program philosophy that expresses its purpose, design, and desired outcomes reflective of the Standards for Single Subject Teaching Credential Programs. The program provides the course work and field experiences necessary to teach the specified subject to all students in California's diverse public school population. The subject matter preparation for prospective teachers is academically rigorous and intellectually stimulating. The institution assigns high priority to and appropriately supports the program as an essential part of its mission. The program curriculum reflects and builds on the State-adopted <i>Academic Content Standards for K-12 Students</i> and <i>Curriculum Frameworks for California Public Schools</i> . The program is designed to establish a strong foundation in subject matter knowledge and understanding that provides a basis for continued development during the teachers' professional career.	O	O	O	O

<b>Draft Standard 1: Program Philosophy and Purpose</b>	<b>Essential</b>	<b>Important</b>	<b>Somewhat Important</b>	<b>Not Important</b>
1.1 The program philosophy, design, and intended outcomes are consistent with the content of the State-adopted Academic Content Standards for K-12 students and Curriculum Frameworks for California public schools.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1.2 The statement of program philosophy shows a clear understanding of the preparation that prospective teachers need in order to be effective in delivering academic content to all students in California schools.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1.3 The program provides prospective teachers with the opportunity to learn and apply significant ideas, structures, methods and core information in the specified subject discipline(s) that underlies the 6-12 curriculum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1.4 The program prepares prospective single-subject teachers to analyze complex discipline-based issues; synthesize information from multiple sources and perspectives; communicate skillfully in oral and written forms; and use appropriate technologies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1.5 Program outcomes are defined clearly and assessments of prospective teachers and program reviews are appropriately aligned.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1.6 The institution conducts periodic review of the program philosophy, goals, design, and outcomes consistent with the following: campus program assessment timelines, procedures, and policies; ongoing research and thinking in the discipline; nationally accepted content standards and recommendations; and, the changing needs of public schools in California.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1.7 Are there any critical characteristics of program quality missing from the above standard that are important in a program that will prepare effective math teachers? <i>(Please fill in Yes or No)</i> <input type="radio"/> Yes <input type="radio"/> No If YES, what would you add?				

## Standards Common to All

Draft Standard 2: Technology	2.0 How important are these program characteristics for preparing effective teachers of math?			
	Essential	Important	Somewhat Important	Not Important
The study and application of current and emerging technologies, with a focus on those used in K-12 schools, for gathering, analyzing, managing, processing, and presenting information is an integral component of the each prospective teacher's program of study. Prospective teachers are introduced to legal, ethical, and social issues related to technology. The program prepares prospective teachers to meet the current technology requirements for admission to an approved California professional preparation program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.1 The institution provides prospective teachers in the subject matter program access to a wide array of current technology resources. The program faculty selects these technologies on the basis of their effective and appropriate uses in the disciplines of the subject matter program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.2 Prospective teachers demonstrate information processing competency, including but not limited to the use of appropriate technologies and tools for research, problem solving, data acquisition and analysis, communications, and presentation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.3 In the program, prospective teachers use current and emerging technologies relevant to their discipline to enhance their subject matter knowledge and understanding.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.4 Are there any critical characteristics of program quality missing from the above standard that are important in a program that will prepare effective math teachers? <i>(Please fill in Yes or No)</i> <input type="radio"/> Yes <input type="radio"/> No If YES, which would you add?				

## Standards Common to All

	<b>3.0 How important are these program characteristics for preparing effective teachers of math?</b>			
<b>Draft Standard 3: Diversity and Equity</b>	<b>Essential</b>	<b>Important</b>	<b>Somewhat Important</b>	<b>Not Important</b>
The subject matter program provides equitable opportunities to learn for all prospective teachers by utilizing instructional, advisement and curricular practices that insure equal access to program academic content and knowledge of career options. Included in the program are the essential understandings, knowledge and appreciation of the perspectives and contributions by and about diverse groups in the discipline.	O	O	O	O
3.1 The institution recruits and provides information and advise to men and women prospective teachers from diverse backgrounds on requirements for admission to and completion of subject matter program.	O	O	O	O
3.2 In the subject matter program, prospective teachers examine principles of educational equity and diversity and their implementation in the curriculum and instructional practices in California public schools.	O	O	O	O
3.3 In the subject matter program, classroom practices and instructional materials are designed to provide equitable access to the academic content of the program to prospective teachers from all background.	O	O	O	O
3.4 The subject matter program incorporates a wide variety of pedagogies and opportunities that take into account cognition and the different ways that students learn. Instructional practices and materials used in the program support equitable access for all prospective teachers and take into account current knowledge of cognition and human learning theory.	O	O	O	O



3.5 Fieldwork experiences for all prospective teachers include significant interactions with K-12 students from diverse populations represented in California public schools.	O	O	O	O
<p>3.6. Are there any critical characteristics of program quality missing from the above standard that are important in a program that will prepare effective math teachers? <i>(Please fill in Yes or No)</i></p> <p>O Yes      O No</p> <p>If YES, what would you add?</p>				

## Standards Common to All

	4.0 How important are these program characteristics for preparing effective teachers of math?			
Draft Standard 4: Coordination	Essential	Important	Somewhat Important	Not Important
One or more faculty responsible for program planning, implementation and review coordinate the Single Subject Subject-Matter Preparation Program. The program sponsor allocates resources to support effective coordination and implementation. The coordinator(s) will ensure ongoing collaboration among academic program faculty, local school personnel, local community colleges and the professional education faculty.	O	O	O	O
4.1 A program coordinator will be designated from within the academic program faculty.	O	O	O	O
4.2 The program coordinator will ensure that opportunities are provided for collaboration by faculty, students, and appropriate public school personnel in the design, development of and revisions to the program and communicate program goals to the campus community, other academic partners, school districts and the public.	O	O	O	O
4.3 Sufficient time and resources are allocated for faculty coordination and staff support for all aspects of the program.	O	O	O	O
4.4 The program provides opportunities for collaboration on curriculum development among program faculty .	O	O	O	O
4.5 University and program faculty will cooperate with community colleges to coordinate courses and articulate course requirements for prospective teachers anticipating transfers to a baccalaureate degree-granting institution.	O	O	O	O

**Standards Common to All**

4.6 Are there any critical characteristics of program quality missing from the above standard that are important in a program that will prepare effective math teachers? *(Please fill in Yes or No)*

☐ Yes      ☐ No

If YES, what would you add?

## Standards Common to All

	<b>5.0 How important are these program characteristics for preparing effective teachers of math?</b>			
<b>Draft Standard 5: Advisement and Support</b>	<b>Essential</b>	<b>Important</b>	<b>Somewhat Important</b>	<b>Not Important</b>
<p>The subject matter program includes a system for identifying, advising and retaining prospective Single Subject teachers. This system will comprehensively address the distinct needs and interests of:</p> <ol style="list-style-type: none"> <li>1 Resident prospective students</li> <li>2 Early deciders entering blended programs</li> <li>3 Underrepresented groups among present teachers</li> <li>4 Prospective teachers who transfer to the institution</li> <li>5 Prospective teachers in career transition</li> </ol>	O	O	O	O
5.1 The institution will develop and implement processes to identify prospective Single Subject teachers and advise them about all program requirements, and career options.	O	O	O	O
5.2 Advisement services will provide prospective teachers with information about their academic progress, including transfer agreements and alternative paths to a teaching credential, and describe the specific qualifications needed for each type of credential, including the teaching assignments it authorizes.	O	O	O	O
5.3 The subject matter program facilitates the transfer of prospective teachers between post-secondary institutions including community colleges through effective outreach and advising and the articulation of courses and requirements. The program sponsor works cooperatively with community colleges to ensure that subject matter coursework at feeder campuses is aligned with the relevant portions of the State-adopted <i>Academic Content Standards for K-12 Students in California Public Schools</i> .	O	O	O	O
5.4 The institution establishes clear and reasonable criteria and allocates sufficient time and personnel resources to enable qualified personnel to evaluate prospective teachers' previous coursework and/or fieldwork for meeting subject matter requirements.				

**Standards Common to All**

5.5 Are there any critical characteristics of program quality missing from the above standard that are important in a program that will prepare effective math teachers? *(Please fill in Yes or No)*

☐ Yes      ☐ No

If YES, what would you add?

## Standards Common to All

	6.0 How necessary are these program characteristics for preparing effective teachers of math?			
Draft Standard 6: Assessment of Subject Matter Competence	Critical	Necessary	Somewhat Necessary	Not Necessary
The program uses formative and summative multiple measures to assess the subject matter competence of each candidate. The scope and content of each candidate's assessment is consistent with the content of the subject matter requirements of the program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.1 Assessment within the program includes multiple measures such as student performances, presentations, research projects, portfolios, field experience journals, observations, and interviews as well as oral and written examinations based on criteria established by the institution.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.2 The scope and content of each assessment is congruent with the specifications for the subject matter knowledge and competence as indicated in the content domains.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.3 End-of-program summative assessment includes a defined process for evaluating performance, an appeal process, and specific opportunities for candidates to repeat portions of the assessment as needed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.4 Assessment scope, process, and criteria are clearly delineated and made available to students when they begin the program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.5 The program staff regularly evaluates the quality, fairness, and effectiveness of the assessment process, including its consistency with program requirements.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.6 Are there any critical characteristics of program quality missing from the above standard that are important in a program that will prepare effective math teachers? <i>(Please fill in Yes or No)</i> <input type="radio"/> Yes <input type="radio"/> No If YES, what would you add?				

## Standards Common to All

	<b>7.0 How important are these program characteristics for preparing effective teachers of math?</b>			
<b>Draft Standard 7: Program Review and Evaluation</b>	<b>Essential</b>	<b>Important</b>	<b>Somewhat Important</b>	<b>Not Important</b>
The institution implements a comprehensive, ongoing system for periodic review of and improvement to the subject matter program. The ongoing system of review and improvement involves university faculty, community college faculty, student candidates and appropriate public school personnel involved in beginning teacher preparation and induction. Periodic reviews shall be conducted at intervals not exceeding 3 years.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7.1 Each periodic review includes an examination of program goals, design, curriculum, requirements, student success, technology uses, advising services, assessment procedures and program outcomes for prospective teachers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7.2 Each program review examines the quality and effectiveness of collaborative partnerships with secondary schools and community colleges.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7.3 The program uses appropriate methods to collect data to assess the subject matter program's strengths, weaknesses and areas that need improvement. Participants in the review include faculty members, current students, recent graduates, faculty in pedagogical preparation programs that graduates enter, employers of credentialed teacher graduates, and appropriate community college and public school personnel. All these stakeholders will have subsequent opportunities to examine review findings and contribute to program development decisions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7.4 Program improvements are based on the results of periodic reviews, the inclusion and implications of new knowledge about the subject(s) of study, the identified needs of program students and school districts in the region, and curriculum policies of the State of California.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Standards Common to All**

7.5 Are there any critical characteristics of program quality missing from the above standard that are important in a program that will prepare effective math teachers? *(Please fill in Yes or No)*

☐ Yes      ☐ No

If YES, what would you add?



### Standards Common to All

	8.0 How important are these program characteristics for preparing effective teachers of math?			
Draft Standard 8: Literacy	Essential	Important	Somewhat Important	Not Important
The program of subject matter preparation for prospective Single-Subject teachers develops skills in literacy and academic discourse in the academic disciplines of study. Coursework and field experiences in the program include reflective and analytic instructional activities that specifically address the use of language, content and discourse to extend meaning and knowledge about ideas and experiences in the fields or discipline of the subject matter.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8.1 The program develops prospective teachers' abilities to use academic language, content, and disciplinary thinking in purposeful ways to analyze, synthesize and evaluate experiences and enhance understanding in the discipline.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8.2 The program prepares prospective teachers to be subject matter literate and able to use the research conventions of the disciplines of the subject matter.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8.3 The program provides prospective teachers with opportunities to learn and demonstrate competence in reading, writing, listening, speaking, communicating and reasoning in their fields or discipline of the subject matter.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8.4 Are there any critical characteristics of program quality missing from the above standard that are important in a program that will prepare effective math teachers? <i>(Please fill in Yes or No)</i> <input type="radio"/> Yes <input type="radio"/> No If YES, what would you add?				

## Standards Common to All

	<b>9.0 How important are these program characteristics for preparing effective teachers of math?</b>			
<b>Draft Standard 9: Early Field Experiences</b>	<b>Essential</b>	<b>Important</b>	<b>Somewhat Important</b>	<b>Not Important</b>
Prospective Single Subject teachers have planned, structured field experiences in departmentalized classrooms beginning as early as possible in the subject matter program. These classroom experiences should be linked to program coursework and should give a breadth of experiences across grade levels and with diverse populations. The early field experience program should be planned collaboratively by subject matter faculty, teacher education faculty and representatives from school districts. The institution will cooperate with school districts in selecting schools and classrooms for introductory classroom experiences and document each prospective teachers' observations and experiences.	O	O	O	O
9.1 Introductory experiences shall include one or more of the following activities: planned observations, instruction or tutoring experiences, and other school based observations or activities that are appropriate for undergraduate students in a subject matter preparation program.	O	O	O	O
9.2 Prospective teachers' early field experiences are substantively linked to the content of coursework in the program. Early field experiences encompass a variety of settings, grade levels and student populations.	O	O	O	O
9.3 Early field experiences encompass a variety of settings, grade levels and student populations.	O	O	O	O
9.4 Prospective teachers should have opportunities to reflect on and analyze their early field experiences in relation to course content. This reflection and analysis is documented using instructional methods such as completion of carefully designed field experience journals, portfolios of required field experience components, discussions in the subject matter course.	O	O	O	O

<b>Draft Standard 9: Early Field Experiences</b>	<b>Essential</b>	<b>Important</b>	<b>Somewhat Important</b>	<b>Not Important</b>
9.5 Each prospective teacher is primarily responsible for documenting early field experiences. Documentation is reviewed as part of the subject matter requirements.	O	O	O	O
9.6 Are there any critical characteristics of program quality missing from the above standard that are important in a program that will prepare effective math teachers? <i>(Please fill in Yes or No)</i> <input type="radio"/> Yes <input type="radio"/> No If YES, what would you add?          				

## Standards Common to All

	<b>10.0 How important are these program characteristics for preparing effective teachers of math?</b>			
<b>Draft Standard 10: Varied Teaching Strategies</b>	<b>Essential</b>	<b>Important</b>	<b>Somewhat Important</b>	<b>Not Important</b>
In the program, prospective Single Subject teachers participate in a variety of learning experiences that model effective curriculum practices, instructional strategies and assessments that prospective teachers will be expected to use in their own classrooms. Prospective teachers experience a variety of assessments as an integral part of instruction, reflect on themselves as learners, and examine ways in which subject matter content is conceived and organized for instruction and learning. Faculty development programs enable college and university subject matter faculty to explore and use varied teaching practices.	O	O	O	O
10.1 Prospective teachers experience in their coursework a variety of assessments, including wide use of selected response, constructed response, oral assessment, and performance-based assessment practices.	O	O	O	O
10.2 Program faculty include in their instruction a variety of curriculum design, classroom organizational strategies, activities, materials, and field experiences incorporating observing, recording, analyzing and interpreting content as appropriate to the discipline.	O	O	O	O
10.3 Program faculty employ a variety of interactive engaging teaching styles that develop and reinforce skills and concepts through open-ended activities such as direct instruction, discourse, demonstrations, individual and cooperative learning explorations, peer instruction, and student-centered discussions.	O	O	O	O
10.4 Faculty development programs provide tangible support for subject matter faculty to explore and use exemplary and innovative curriculum practices.	O	O	O	O
10.5 Program coursework and fieldwork provide prospective teachers opportunities to reflect on different learning styles and cognitive development theories and their implications for mastery of subject content.	O	O	O	O

<b>Draft Standard 10: Varied Teaching Strategies</b>	<b>Essential</b>	<b>Important</b>	<b>Somewhat Important</b>	<b>Not Important</b>
10.6 Program faculty use varied and innovative teaching strategies, which provide opportunities for prospective teachers to learn how content is conceived and organized for instruction in a way that fosters conceptual understanding as well as procedural knowledge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10.7 Program coursework and fieldwork include the examination and use of various kinds of technology that are appropriate to the subject matter discipline.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>10.8 Are there any critical characteristics of program quality missing from the above standard that are important in a program that will prepare effective math teachers? <i>(Please fill in Yes or No)</i></p> <p><input type="radio"/> Yes      <input type="radio"/> No</p> <p>If YES, what would you add?</p>				

## **Draft Single Subject Program Standards for Math**

Standard 11: Required Subjects of Study

Standard 12: Problem Solving

Standard 13: Mathematics as Communication

Standard 14: Reasoning

Standard 15: Mathematical Connections

Standard 16: Delivery of Instruction

### Single Subject Program Standards for Math

	11.0 How important are these program characteristics for preparing effective teachers of math?			
Draft Standard 11: Required Subjects of Study	Essential	Important	Somewhat Important	Not Important
In the program, each prospective teacher studies and learns advanced mathematics <sup>1</sup> that incorporates the California <i>Student Academic Content Standards and Mathematics Frameworks for California Public Schools</i> . The curriculum of the program addresses the <i>Subject Matter Requirements</i> and standards of program quality as set forth in this document.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11.1 Required coursework includes the following major subject areas of study: algebra, geometry, number theory, calculus, history of mathematics, statistics and probability. This coursework also incorporates the content of the student academic content standards from an advanced viewpoint. Also, infused in required coursework are connections to the middle school and high school curriculum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11.2 Required coursework exposes underlying mathematical reasoning, explores connections among the branches of mathematics, and extends opportunities for problem solving and mathematical communication.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>





## Single Subject Program Standards for Math

	12.0 How important are these program characteristics for preparing effective teachers of math?			
Draft Standard 12: Problem Solving	Essential	Important	Somewhat Important	Not Important
In the program, prospective teachers of mathematics develop effective strategies for solving problems both within the discipline of mathematics and in applied settings that include non-routine situations. Problem-solving challenges occur throughout the program of subject preparation in mathematics. Through coursework in the program, prospective teachers develop a sense of inquiry and perseverance in solving problems	O	O	O	O
In the program, each prospective teacher learns and demonstrates the ability to:	O	O	O	O
12.1 Place mathematical problems in context and explore their relationship with other problems.	O	O	O	O
12.2 Solve mathematical problems in more than one way when possible.	O	O	O	O
12.3 Generalize solutions where appropriate and justify conclusions.	O	O	O	O
12.4 Use appropriate technologies to conduct investigations, make conjectures, and solve problems	O	O	O	O

**Single Subject Program Standards for Math**

12.5 Are there any critical characteristics of program quality missing from the above standard that are important in a program that will prepare effective math teachers? *(Please fill in Yes or No)*

☐ Yes      ☐ No

If YES, what would you add?

### Single Subject Program Standards for Math

Draft Standard 13: Mathematics as Communication	13.0 How important are these program elements for preparing effective teachers of math?			
	Essential	Important	Somewhat Important	Not Important
In the program, prospective teachers learn to communicate their thinking clearly and coherently to others using appropriate language, symbols and technologies. Prospective teachers develop communication skills in conjunction with mathematical literacy in each major component of a subject matter program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the program each prospective teacher learns and demonstrates the ability to:				
13.1 Articulate mathematical ideas verbally and in writing, using appropriate terminology.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.2 Present mathematical explanations suitable to a variety of grade levels.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.3 Present mathematical information in various forms, including but not limited to models, charts, graphs, tables, figures, and equations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.4 Analyze and evaluate the mathematical thinking and strategies of others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.5 Use clarifying and extending questions to learn and to communicate mathematical ideas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.6 Use appropriate technologies to present mathematical ideas and concepts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.7 Are there any critical characteristics of program quality missing from the above standard that are important in a program that will prepare effective math teachers? <i>(Please fill in Yes or No)</i> <input type="radio"/> Yes <input type="radio"/> No If YES, what would you add?				

### Single Subject Program Standards for Math

	14.0 How important are these program elements for preparing effective teachers of math?			
Draft Standard 14: Reasoning	Essential	Important	Somewhat Important	Not Important
In the program, prospective teachers of mathematics learn to understand that reasoning is fundamental to knowing and doing mathematics. Reasoning and proof accompany all mathematical activities in the program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the program each prospective teacher learns and demonstrates the ability to:				
14.1 Reason both deductively and inductively in each content domain of the subject matter requirements.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.2 Formulate and test conjectures, construct counter-examples, make valid arguments, and judge the validity of mathematical arguments in each content domain of the subject matter requirements.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.3 Present informal and formal proofs in oral and written formats in each content domain of the subject matter requirements.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.4 Create mathematical explanations suitable to a variety of grade levels.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.5 Are there any critical characteristics of program quality missing from the above standard that are important in a program that will prepare effective math teachers? <i>(Please fill in Yes or No)</i> <input type="radio"/> Yes <input type="radio"/> No If YES, what would you add?				

### Single Subject Program Standards for Math

Draft Standard 15: Mathematical Connections	15.0 How important are these program elements for preparing effective teachers of math?			
	Essential	Important	Somewhat Important	Not Important
In the program, prospective teachers of mathematics develop a view of mathematics as an integrated whole, seeing connections across different mathematical content areas. Relationships among mathematical subjects and applications are a consistent theme of the subject matter program's curriculum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the program each prospective teacher learns and demonstrates the ability to:				
15.1 Illustrate, when possible, abstract mathematical concepts using applications.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15.2 Investigate ways mathematical topics are inter-related.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15.3 Apply mathematical thinking and modeling to solve problems that arise in other disciplines.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15.4 Recognize how a given mathematical model can represent a variety of situations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15.5 Create a variety of models to represent a single situation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15.6 Understand the interconnectedness of topics in mathematics from a historical perspective.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15.7 Are there any critical characteristics of program quality missing from the above standard that are important in a program that will prepare effective math teachers? <i>(Please fill in Yes or No)</i> <input type="radio"/> Yes <input type="radio"/> No If YES, what would you add?				

## Single Subject Program Standards for Math

Draft Standard 16: Delivery of Instruction	16.0 How important are these program elements for preparing effective teachers of math?			
	Essential	Important	Somewhat Important	Not Important
In the program, faculty use multiple instructional strategies, activities and materials that are appropriate for effective mathematics instruction. Faculty model approaches of instructional delivery that prospective teachers will be expected to use in their own classrooms.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the program each prospective teacher learns and demonstrates the ability to:				
16.1 Is taught in a way that fosters conceptual understanding as well as procedural knowledge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16.2 Incorporates a variety of instructional formats including but not limited to direct instruction, collaborative groups, individual exploration, peer instruction, and whole class discussion led by students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16.3 Provides for learning mathematics in different modalities, e.g., visual, auditory, and kinesthetic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16.4 Develops and reinforces mathematical skills and concepts through open-ended activities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16.5 Uses a variety of appropriate technologies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16.6 Includes approaches that are appropriate for use at a variety of grade levels.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16.7 Are there any critical characteristics of program quality missing from the above standard that are important in a program that will prepare effective math teachers? <i>(Please fill in Yes or No)</i> <input type="radio"/> Yes <input type="radio"/> No If YES, what would you add?				

Overall Program Standards	
<p>Please judge the extent to which the full set of subject matter program standards described in this survey encompass the program elements that are necessary to prepare an effective social math teacher by answering the questions below.</p> <p>If you think the full set of program standards cover all of the critical program elements that are necessary to prepare effective social math teachers, write 100 in the space provided in Question a. If you think the program standards cover <b>none</b> of the program elements that are necessary to prepare an effective math teacher, write 0 in the space provided. If you think the program standards cover <b>some, but not all</b>, of the program elements, write a number from 1 to 99 to reflect the proportion of the single subject program in math that <i>are covered</i> by these program standards.</p>	
<p><b>a.</b> Taken <b>as a whole</b>, what percentage of the program elements needed to prepare effective <b>math</b> teachers is covered by <b>the full set</b> of program standards?</p>	<p><b>b.</b> If less than 100% in Question a, please identify any critical program elements that are missing from the program standards. <i>(It is not necessary to repeat missing elements you mentioned in previous responses.)</i></p>
<p>___ ___ ___ %</p>	